

Appl. No. 10/054,010

Remarks/Arguments

Claims 1 through 18 are pending and stand rejected. Claims 1-5, 10-11, 14, and 18 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U. S. Pat. No. 5,698,037 ("Stauffer") in view of U. S. Pat. No. 5,537,508 ("Ebbing et al.") and pending U. S. Pat. Appl. Publication US 2003/0093917 ("DiBello"). Dependent claims 6-8; 9 and 16-17; 12-13 and 15 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Stauffer, Ebbing et al., and DiBello as applied to claim 1 and further in view of U. S. Pat. Nos. 6,507,698 ("Nagashima et al.") and 5,556,479 ("Bran"); U. S. Pat Nos. 6,258,170 ("Somekh et al.") and 5,966,499 ("Hinkle et al."); U. S. Pat. No. 4,191,512 ("O'Neal et al."); and U. S. Pat. No. 4,321,031 ("Woodgate"), respectively. These rejections are respectfully traversed. Neither the patents cited in the outstanding Office action, nor any other evidence of record, establish a *prima facie* case of obviousness.

Stauffer describes an delivery system that includes a module 11 with a reservoir, which receives the liquid from a liquid supply 12 through a liquid refill valve 22 (see Stauffer at Fig. 1 and col. 3, lines 59-65). The liquid source 12 is connected to a nitrogen source 13 that pressurizes the source to supply liquid to module 11 (see *id.* at col. 3, lines 46-52). The reservoir is heated to change the liquid into a vapor, which then passes through a chamber feed valve 20, a shut-off valve, and a proportioning pressure valve 21 (see *id.* at col. 3, lines 62-65). Contrary to the Examiner's contention, Stauffer fails to disclose or suggest, *inter alia*, a pump that transports the liquid phase source material to a vaporizer module having a flow rate controller. Instead, the apparatus in Stauffer has a flow rate controller 27 that regulates the supply of nitrogen into the processing chamber rather than liquid supply 12 (see *id.* at col. 3, lines 41-42 and Fig. 1). Stauffer also fails to disclose or suggest a mass flow controller adapted to provide flow of a carrier gas at a controlled rate into the vaporizer module such that the liquid phase source material is vaporized and then entrained in the carrier gas and

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carried out of the vaporizer module. In the apparatus of Stauffer, flow sensor 65, which is located downstream of the reservoir and prior to the processing chamber, controls proportioning valve 21 thereby controlling the amount of vapor flowing out of –rather than into- the reservoir (see *id.* at col. 7, lines 30-44 and Figs. 7 and 8).

The combination of Stauffer with Ebbing and DiBello fails to render obvious the claimed invention, nor is there any teaching, suggestion, or motivation within any of these references to make the combination. Ebbing discloses an apparatus for generating dry vapor from a liquid source that is heated within a vessel to sufficient temperature to provide a vapor. While Ebbing states that its apparatus can deliver vapor from a vessel at a rate up to 1,000 sccm as measured by a mass flow controller, the apparatus of Ebbing does not contain a mass flow controller, particularly a mass flow controller adapted to provide flow of a carrier gas at a controlled rate into the vaporizer module.

Like Stauffer, Ebbing also fails to disclose the use of a carrier gas to entrain the vaporized liquid phase source material. To remedy this, the Examiner seeks to combine Stauffer and Ebbing with DiBello. DiBello discloses a bubbler-type apparatus wherein the carrier gas is combined with a liquid-phase process chemical to provide a fluid stream. In the DiBello apparatus, the gas lines and other elements are heated (see DiBello at para. 17). An analyzer is employed downstream of mixing module 12 that controls the concentration of the process chemical within the fluid stream by controlling the flow rate of the carrier gas (see *id.* at para. 19). However, DiBello does not disclose a mass flow controller to provide flow of the carrier gas at a corresponding controlled rate or a flow rate controller or adjustable regulator for the liquid phase source material. Further, Stauffer, a reservoir-type apparatus, may teach away from DiBello, a bubbler type apparatus, by discussing the problems associated with bubbler-type apparatuses such as poor reliability, unheated or inadequately heated points of the system and inconsistent performance (see Stauffer at col. 1, lines 29-37 and col. 7, lines

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9-16). Therefore, there would be no teaching nor motivation to combine the references in the manner that the Examiner suggests.

Applicant respectfully requests that the obviousness rejections of dependent claims 6-8; 9 and 16-17; 12-13 and 15 as allegedly being unpatentable over Stauffer, Ebbing et al., and DiBello as applied to claim 1 and further in view of Nagashima et al. and Bran; Somekh et al. and Hinkle et al.; O'Neal et al.; and Woodgate, respectively, be removed. As discussed above, the combination of Stauffer, Ebbing et al., and DiBello fail to disclose, teach or suggest all of the elements in Applicant's claim 1. The additional references fail to remedy the deficiencies of Stauffer, Ebbing et al., and DiBello. Therefore, the rejection of dependents claims 6-8, 9 and 16-17, 12-13 and 15, which include all of the limitations of independent claim 1, should be removed.

SUMMARY

For at least the reasons set forth above, it is respectfully submitted that the above-identified application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are respectfully requested.

Should the Examiner believe that anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned Attorney at the telephone number listed below.

Respectfully submitted,


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